

REMARKS

Review and reconsideration of this application are respectfully requested.

Claims 35, 40, 41 and 42 are amended to place the application in better form for allowance.

Claims 32-35, 37-46 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feit et al in view of Johnson et al and any one of E.P. 432,911, coran et al or Novak et al optionally further in view of Dyneon™ Fluorothermoplastics products information and Viton Fluoroelastomer Technical Information for the same reasons as expressed in paper no.6, paragraph 2.

In the previous office action, the Examiner alleged that it was known from Feit et al to form a hose with an inner rubber layer formed via extrusion of an acrylonitrile-butadiene rubber and to extrude a barrier layer which includes a terpolymer derived from tetrafluoroethylene, hexafluoropropylene and vinylidene. In the present final rejection, the Examiner suggests that applicant did not dispute that the reference to Feit suggests that one skilled in the art of making a hose construction would have incorporated a fluorothermoplastic of the same type described and claimed by applicant as the barrier layer. Feit, as noted earlier in paper number 6, fails to incorporate a fluoroelastomer blended with the fluorothermoplastic. The Examiner agrees that the secondary reference to Johnson does not expressly disclose the same fluorothermoplastic in the disclosed blend in Johnson; however, the Examiner states that the question to be answered here is “would it have been obvious to incorporate a fluoroelastomer with the fluorothermoplastic of Feit in the hose?”

As stated in prior responses, Feit et al. teach a hose which comprises an inner core of acrylonitrile-butadiene rubber, a barrier layer of a terpolymer derived from tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride wherein the barrier layer is adhered directly to the acrylonitrile-butadiene rubber, and a cover layer. Whether or not Feit teaches a

fluorothermoplastic is not believed to be critical. What is critical is the fact that the present invention is directed to various embodiments of a method of producing a flexible polymeric hose having improved fuel vapor barrier properties. The method comprises the forming of various layer of the tubular structure of the hose wherein one of the tubular structures is a specific blend of about 20 to 80 weight percent of a first hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer having a fluorine content of about 65 to 73 weight percent fluorine and a second hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer having a fluorine content of about 70 to 75 weight percent fluorine. The first terpolymer exhibits an elastomeric characteristic and the second terpolymer exhibits a thermoplastic characteristic. In accordance with the invention, the method of producing the flexible hose is relatively inexpensive to operate which provides for the manufacture of a cost-effective hose capable of meeting the strict fuel permeation standards of the automotive industry.

Applicant strongly contends there is no teaching or suggestion whatsoever by Feit et al that the barrier layer is or should be a blend of hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymers, much less a specific blend as defined in the present invention wherein the barrier layer includes about 20 to 80 weight percent of a first hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer containing about 67 to 73 weight percent fluorine and having elastomeric characteristics, and about 80 to 20 weight percent of a second hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer containing about 70 to 75 weight percent fluorine and having thermoplastic characteristics.

Johnson et al is cited as suggesting that those skilled in the art at the time the invention was made would have blended a thermoplastic fluoropolymer with an elastomeric fluoropolymer in order to provide a composition which was not as brittle as the thermoplastic fluoropolymer alone. According to the Examiner, Johnson et al suggests the use of the same claimed elastomer for the fluoropolymeric elastomer material to be blended with a thermoplastic fluoropolymer which was described as a terpolymer. It is alleged that the use of such a blend in the hose construction would have been obvious to those of ordinary skill in the art at the time the

invention was made in order to provide the barrier layer of Feit with a less brittle construction (a hose being desirably elastomeric). In order to further evidence that those skilled in the art at the time the invention was made would have incorporated a blend of a thermoplastic polymer and an elastomeric polymer as a layer in a hose, the Examiner has cited EP 432,911; Coran et al or Novak et al (all newly cited).

Applicant submits that Johnson teaches a fluoroelastomeric terpolymer containing about 45 to 90 mole % vinylidene fluoride, about 5 to 50 mole % hexafluoropropylene and about 10 to 35% mole % tetrafluoroethylene. It is noted that Johnson specifically discloses that the fluoroelastomer may be a copolymer or a terpolymer. With respect to the fluorothermoplastic component, applicant notes that Johnson is just as specific in defining the fluorothermoplastic component as a copolymer containing vinylidene fluoride and hexafluoropropylene units. While the thermoplastic copolymer of Johnson et al. may contain other monomer units such as fluoropropylene and perfluoroethoxyethylene, such other monomer units are neither required nor desired, but are optional and then only in minor amounts. Applicant contends that it is significant that Johnson et al. disclose the use of tetrafluoroethylene as a potential monomeric unit for their elastomeric copolymer or terpolymer but not as a potential monomeric unit for their thermoplastic copolymer. If Johnson et al had intended to include tetrafluoroethylene as a monomer in their thermoplastic copolymer, they would have included it. The fact that tetrafluoroethylene is positively recited as a component in the fluoroelastomeric material and specifically omitted as a component in the fluorothermoplastic copolymer is more than a mere coincidence. Accordingly, one can reasonably conclude that Johnson et al. did not consider tetrafluoroethylene to be a suitable monomer unit to be added to the thermoplastic copolymer even in minor amounts. Applicants believe that it would be unreasonable for the Examiner to speculate what termonomers Johnson et al had in mind other than those monomers disclosed. Therefore, it is believed that the Examiner has simply assumed what Johnson had in mind for the components of the fluorothermoplastic component and this, of course, is improper. since Johnson et al. fail to disclose or suggest the blending of an elastomeric terpolymer formed by the copolymerization of hexafluoropropylene, vinylidene fluoride and tetrafluoroethylene with a

thermoplastic terpolymer formed by the copolymerization of hexafluoropropylene, vinylidene fluoride and tetrafluoroethylene, applicants contend that there is no direct link between Johnson et al. and Feit et al and, therefore, no motivation to combine the teachings of the two references in an attempt to arrive at the present invention .

Furthermore, applicant believes that the Examiner has gathered a broad and vague assortment of references to Novak et al, Coran et al, EP 432,911 Dyneon brochure and Viton brochure, which are combined with Feit et al and Johnson et al in an attempt to construct a reasonable version of the barrier layer of the present invention from bits and pieces of such references.

Novak et al disclose polymer blend compositions having a continuous non-fluorine-containing thermoplastic polymer and a disperse phase of a fluorinated elastomer.

Coran et al teach thermoplastic elastomeric compositions containing about 25 to 85 parts by weight of crystalline thermoplastic polyolefin and about 75 to 15 part by weight of rubber.

EP 432,911 discloses a blend of 50 to about 90% of fluorinated elastomer and 10 to about 50% of an essentially fluorine-free thermoplastic.

The Dyneon reference is simply a technical information paper concerning their line of fluorothermoplastics.

The Viton reference is simply a technical information paper concerning their line fluoroelastomers.

It is obvious that none of the above references to Novak et al, Coran et al, EP 432,911, Dyneon and Viton teach or even suggest a blend of a fluorothermoplastic and a fluoroelastomer. Furthermore, it is believed that neither of the references to Feit et al and Johnson et al teach the

blend of the present invention, nor is it believed that one skilled in the art would be led to the present invention by the teachings of any of these references either alone or in combination with one or more of the other references. Accordingly, applicant respectfully requests that the rejection be withdrawn and the application be allowed to proceed to issue.

Applicant contends that the present invention is concerned with various embodiments of a method of producing a flexible polymeric hose having improved fuel vapor barrier properties. The method comprises the forming of various layer of the tubular structure of the hose wherein one of the tubular structures is a specific blend of about 20 to 80 weight percent of a first hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer having a fluorine content of about 65 to 73 weight percent fluorine and a second hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer having a fluorine content of about 70 to 75 weight percent fluorine. The first terpolymer exhibits an elastomeric characteristic and the second terpolymer exhibits a thermoplastic characteristic. In accordance with the invention, the method of producing the flexible hose is relatively inexpensive to operate which provides for the manufacture of a cost-effective hose capable of meeting the strict fuel permeation standards of the automotive industry. Accordingly, it is respectfully requested that this rejection be withdrawn.

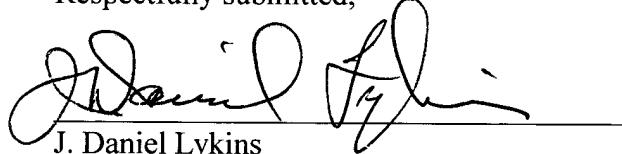
With respect to the rejection of claims 46-50, applicant submits that dependent claims 46-50 are directed to a preferred aspect of the invention and are intended to further limit the claims from which they depend. It is believed that the claims from which claims 46-50 depend will be deemed allowable; therefore, such dependent will also be deemed allowable. Accordingly, it is respectfully requested that the rejection of claims 46-50 be withdrawn.

The Examiner's attention is directed to the fact that the present application is a divisional application of U.S. Serial No. 09/754,674, filed January 4, 2001, which is a divisional application of 09/083,294, filed May 22, 1998. Both prior applications have been found allowable and have now issued as U.S. Patent No. 6,365,250 and U.S. Patent No. 6,203,873, respectively.

In summary, applicant respectfully submits that there is no teaching in any of the references, either alone or in combination, to a method for employing a barrier layer comprising a blend of about 20 to 80 weight percent of a first hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer having a fluorine content of about 65 to 73 weight percent fluorine and having elastomeric characteristics, with about 80 to 20 weight percent of a second hexafluoropropylene-tetrafluoroethylene-vinylidene fluoride terpolymer having a fluorine content of about 70 to 75 weight percent fluorine and having thermoplastic characteristics; nor is there any suggestion to do so. It is well established that teachings or references may be combined only if there is some incentive to do so, see *re Fine*, 5 USPQ 2d at 1600. Also, in *Micro Chemical, Inc. v. Great Plains Chemical Co.*, 41 USPQ2D 1238, 1244 (Fed. Cir. 1997), it is stated "A determination of obviousness must involve more than indiscriminately combining prior art; a motivation or suggestion to combine must exist." Furthermore, the teaching or suggestion must be found in the prior art, not in the applicant's disclosure, *in re Vaeck*, 947 F. 2d 488, 20 USPQ 2d 1438 (Fed. Cir. 1991).

In view of the foregoing amendments and discussion, it is believed that this application is now in condition for allowance and an early indication thereof is earnestly solicited.

Respectfully submitted,



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